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Migration of Pieridae (Butterflies) Through Portachuelo Pass,
Rancho Grande, North-central Venezuela.¹

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(Plate I).

[This is one of a series of papers resulting from the 45th, 46th and 47th Expeditions of the Department of Tropical Research of the New York Zoological Society, made during 1945, 1946 and 1948, under the direction of Dr. William Beebe, with headquarters at Rancho Grande in the National Park of Aragua, Venezuela. The expeditions were made possible through the generous cooperation of the National Government of Venezuela and of the Creole Petroleum Corporation.

[The characteristics of the research area are in brief as follows: Rancho Grande is located in north-central Venezuela (10° 21' N. Lat., 67° 41' W. Long.), 80 kilometers west of Caracas, at an elevation of 1,100 meters in the undisturbed montane rain forest which covers this part of the Caribbean range of the Andes. The migration flyway of Portachuelo Pass, which is also the water-shed between the Caribbean and Lake Valencia, is 200 meters from Rancho Grande. Adjacent ecological zones include seasonal forest, savanna, thorn woodland, cactus scrub, the fresh-water lake of Valencia and various marine littoral zones. The Rancho Grande area is generally subtropical, being uniformly cool and damp throughout the year because of the prevalence of the mountain cloud cap. The dry season extends from January into April. The average humidity during the expeditions, including parts of both wet and dry seasons, was 92.4%; the average temperature during the same period was 18° C.; the average annual rainfall over a five-year period was 174 cm. The flora is marked by an abundance of mosses, ferns and epiphytes of many kinds, as well as a few gigantic trees. For further details see Beebe & Crane, *Zoologica*, Vol. 32, No. 5, 1947. Unless otherwise stated, the specimens discussed in the present paper were taken in the montane cloud forest zone, within a radius of one kilometer of Rancho Grande.

[For an account of Portachuelo Pass, together with a general introduction to the groups of migrating insects and migrational factors, see "Insect Migration at Rancho Grande," by William Beebe, *Zoologica*, 1949, Vol. 34, No. 12, pp. 107-110; for preceding papers in this series see, "Migration of Papilionidae," *ibid.*, 1949, Vol. 34, No. 14, pp. 119-126, and "Migration of Danaidae, Ithomiidae, Acraeidae and Heliconidae," *ibid.*, 1950, Vol. 35, No. 3, pp. 57-68.]

MIGRATION OF PIERIDAE.

Among the migrants through Portachuelo Pass this family is represented by 18 genera and 44 species. Among them are a few of the

most abundant migrants, passing day after day and month upon month in uncountable numbers. Many are so similar in size, pattern and coloration that in field identification they can only be lumped, and dependence can be placed solely on captured specimens. Others are clearly distinguishable as far as the lenses of binoculars will detect them, either far down the gorge or high in air.

We frequently found an unexpectedly large concentration of species mingled in large, dense, swiftly flying flocks of individual pierids. The following will illustrate this: In 1948, April 27, took 8 specimens of 5 species; May 23, 18 specimens of 14 species; June 6, 35 specimens of 13 species; July 3, 6 specimens of 5 species; July 5, 11 specimens of 10 species; July 8, 20 specimens of 11 species.

We had few opportunities of tracing the Rancho Grande migration of Pieridae any considerable distance north or south of Portachuelo Pass. The following were taken, among others, which flew on board the *Santa Paula* on August 8, 1948, while we were steaming close in shore westward from Puerto Cabello. The insects were headed eastward: *Ascia m. monuste* (males and females), *Anteos maerula*, *Eurema albula*, *salome* and *venusta*.

DISMORPHINAE.

The subfamily Dismorphinae is represented by two genera and eight species. The genus *Dismorphia* includes seven of these species which defy any color classification, utterly confusing in the variety of their patterns and coloring, both specifically and sexually. Superficially, on the wing, these butterflies (might) be mistaken for ithomiids, acraeids, heliconids and even one or two day-flying moths with which they were associated as they poured through the Pass. None can be said to be abundant although occasional small flocks were seen. Three species are represented by single specimens.

Dismorphia amphione astynomides Rober.

Field Name: Many-colored Pierid.

Species Range: Mexico to Boliva and Guiana.

Subspecies Range: Venezuela and Trinidad.

Field Characters: The male has a typical

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ithomiine pattern on exposed portions, but pierid white on concealed anterior parts of hindwings. In flight the white flashes out.

Number: Total recorded, 36. Taken, 1.

Sex: Males only taken and seen.

Date: June 5, 6 and 7.

Frequency: Observed on only three days in June.

Record: 1948—June 5 (3 clearly seen but out of reach), 6 (27 seen and 1 caught, No. 48747), 7 (7 passed beyond reach in a dense swarm of *Eurema*).

***Dismorphia critomedia* (Geyer).**

Field Name: Black- and -white Round-winged Dismorphia.

Species Range: Panama to Peru and Brazil.

Field Characters: Forewing black with white oblique band and two dots; hindwing white, black bordered. Hardly to be distinguished from *Leptophobia pentheca* and from female *Dismorphia nemesis*.

Number: Total, 7. Taken, 7.

Sex: Both sexes taken.

Date: April 23 to June 11.

Frequency: None recognized except those taken.

Non-migrant Record: A second male taken on June 11 was on Water Trail, some distance from the Pass, and loitering. In 1945 two females were taken in the jungle on July 1 and August 4, well away from the Pass.

Record: 1948—April 23 (1), 27 (male, No. 48412); May 21 (male), 23 (male); June 6 (male), 10 (female, No. 48558), 11 (male).

***Dismorphia hyposticta* (Felder).**

Field Name: Black-bordered Yellow-winged Dismorphia.

Species Range: Colombia and Venezuela.

Field Characters: Similar to *D. medora* but with narrower black border to hindwings. Close to *D. critomedia* but with white replaced by yellow.

Number: Total seen, 8. Taken, 4.

Sex: Both sexes taken.

Date: May 9 to July 3.

Frequency: Probably many more seen but not recognized with certainty.

Record: 1948—May 9 (female, No. 48513), 23 (female); June 6 (1); July 3 (1, No. 48725).

***Dismorphia medora medora* (Doubl.).**

Field Name: Broad-bordered Yellow Dismorphia.

Species Range: Panama to Peru.

Subspecies Range: Colombia and Venezuela.

Field Characters: Indistinguishable from *D. hyposticta* except for a much wider black margin to the hindwings. This character is evident on the wing when individuals are flying slowly and near at hand. At a distance often confused with a yellow and black day-flying moth, the two species mingling in the same flock on days of heavy migration.

Number: Total, 127. Taken, 12.

Sex: Both sexes taken.

Date: April 23 to September 8.

Frequency: Taken singly, but nearly 100 seen on July 8.

Non-migrants: In 1945, 2 were taken in the jungle, a female on July 16 and a male on the 20th.

Record: 1946 — August 7 (male, No. 46903). 1948—April 23 (male); May 1 (female, No. 48438), 25 (male and female), 26 (female), 31 (male); June 6 (male); July 6 (19 seen), 8 (female taken, 96 seen, in company with day-flying moths), 27 (male taken, several seen); September 8 (male and female).

***Dismorphia melite* (Linn.).**

Field Name: Black-tipped Yellow Dismorphia.

Species Range: Mexico to Southern Brazil.

Field Characters: A rare, pale green pierid, with black tips and foreedge spot on forewings.

Number: Taken, 1.

Record: 1946—May 13 (1 taken).

***Dismorphia nemesis nemesis* (Latr.).**

Field Name: Pointed-wing Dismorphia.

Species Range: Costa Rica to Colombia and Bolivia.

Subspecies Range: Colombia and Venezuela.

Field Characters: Sexually dimorphic. Male forewing black with fine white streaks, hindwing shining gray, posteriorly yellow. Female with curved and pointed forewing, close to *D. critomedia*.

Number: Total, upwards of 600. Taken, 28.

Sex: Both sexes taken.

Date: April 27 to August 2.

Frequency: The most abundant of this subfamily. The sexes often segregated, as 63 females on June 10, and 115 males on June 24.

Non-migrants: In 1945 a male was taken in the jungle, and a female in the adjoining Pass of Choroni.

Record: 1946—May 28 (female). 1948—April 27 (2 females taken, No. 48409, 150 plus seen); May 8 (female), 21 (2 females), 26 (male, No. 48627), 29 (male); June 6 (5 males, 3 females taken. 200 plus seen), 10 (female taken, 63 females seen), 24 (2 males taken, 115 males seen); July 2 (female), 8 (female, No. 481121), 14 (2 females), 15 (female), 16 (2 males), 26 (female); August 2 (male).

***Dismorphia theucharilla theucharilla* (Doubl.).**

Field Name: Small Many-colored Dismorphia.

Species Range: Venezuela and Colombia.

Subspecies Range: Venezuela.

Field Characters: A small, rare ithomiid mimic.

Number: A single, worn specimen taken.

Record: 1946—June 1 (1 taken).

The second genus of this subfamily is represented among the migrants by a single species.

***Pseudoperis nehemia virdua* (Feld.).**

Field Name: Small Pale Greenish Pierid.

Species Range: Mexico to South Brazil.

Subspecies Range: Colombia and Venezuela.

Field Characters: A medium, delicate pierid, bluish white, unmarked.

Number: Total, 22. Taken, 2.

Date: May 23 and 29.

Frequency: A flurry of 21 individuals in a single flock on May 23, and a single one taken on the 29th, were all that were recorded.

Record: 1948—May 23 (1 taken, 21 seen), 29 (1 taken).

The pierid Tribe Euchlorini is represented among the migrants by a single genus and species.

***Hesperocharis marchalii marchalii* (Guérin).**

Field Name: Dark-veined White.

Species Range: West side of South America from Colombia to Argentina.

Subspecies Range: Colombia and Venezuela.

Field Characters: Although only two specimens were taken, I certainly identified this species several times from its unique dark veining, especially strong on the ventral side. Otherwise it was just another medium White.

Number: Total, 7. Taken, 2.

Date: 1948—May 29 (1, No. 48669); July 21 (1, No. 481271), 24 (3 seen), 26 (1 seen), 27 (1 seen).

Three species of *Catanticta* and two of *Leodonta* are included among the migrants, and may be considered in a loose color group. In spite of apparently good pattern characters I have no sight records for any species. All seem rare.

***Catanticta crowleyi* Butler.**

Field Name: Blackish-brown Pierid.

Species Range: Venezuela.

Field Characters: The only migrant pierid which is in general blackish-brown, obscurely dotted with white. Hints of red and yellow spotting below.

Number: Taken, 6.

Date: April 27 to August 2.

Record: 1946 — August 2 (No. 46880). 1948—April 27 (No. 48408); May 25 (1), 29 (1); July 14 (1), 15 (1).

***Catanticta flisa flisa* (Herrich-Schaeffer).**

Field Name: White-V Pierid.

Species Range: Central America to Peru.

Subspecies Range: Colombia, Ecuador and Venezuela.

Field Characters: White-dotted black except for an elongated white V or wedge in wing centers.

Numbers: Taken, 3.

Sex: Both sexes taken.

Date: April 29 to July 21.

Record: 1948 — April 29 (female, No. 491447); May 6 (1); July 21 (male).

***Catanticta prioneris albescens* Rober.**

Field Name: White-dotted-border, Yellow-underside.

Species Range: Colombia and Peru.

Subspecies Range: Western Colombia and Venezuela.

Field Characters: White, with broad, white-spotted black border. Easily confused with *Pieris mandela*, but none were recognized on the wing. Yellow spots underwing.

Number: Taken, 6.

Date: April 29 to September 7.

Record: 1946—September 7 (No. 461156). 1948—April 29 (1); May 1 (1), 9 (1); June 6 (1); July 6 (1).

***Leodonta dysoni dysoni* Doubl.**

Field Name: Yellow-spotted Underwing.

Species Range: Costa Rica to Peru.

Subspecies Range: Venezuela.

Field Characters: Larger, and with wider border, but very close in pattern to *Catanticta prioneris albescens*.

Number: A single specimen taken.

Record: 1948—July 2 (1).

***Leodonta tagasta marginata* Scho.**

Field Name: Yellow-and-Red-spotted Underwing.

Species Range: Venezuela, Ecuador and Peru.

Subspecies Range: Venezuela.

Field Characters: The large yellowish underwing spots distinguish this species. Above close to *Pieris mandela*.

Number: Taken, 5.

Date: April 8 to July 17.

Record: 1945 — April 8. 1948 — May 21 (1); July 2 (1), 14 (1), 17 (1).

***Archonias tereas critias* (Feld.).**

Field Name: Papilio-mimic Pierid.

Species Range: Mexico to South Brazil and Ecuador.

Subspecies Range: Colombia and Venezuela.

Field Characters: A startling mimic of the male *Papilio anchises osyris*, scarcely to be differentiated in the hand. Still more remarkable is the fact that in size and pattern the sexes of *Archonias* differ in exactly the same way as do the corresponding sexes of the *Papilio* model. This includes greater size, large extent of white and scarlet spots in the females of both species. The pierids can be told, in the hand, by the inconspicuous line of submarginal white dots on the under side of the hindwings.

Number: Many probably seen but confused with *Papilios*.

Sex: Both sexes taken.

Date: April 8 to July 18.

Frequency: Unlike any other species of migrant, while a number were taken in 1945 and considerably more in 1946, not a single individual was either seen or taken in the year 1948.

Non-migrants: In 1945 six males were taken along jungle trails on June 1, 8 (8), 14

and 20 (2). In addition a female was captured in Limon on July 3.

Record: 1946—April 8, 10, 12, 13 and 27; May 4, 12 (female); June 28, 30 (male and female); July 1, 5, 9, 18.

***Charonias eurytele caraca* Kaye.**

Field Name: Small Ithomiid Mimic.

Species Range: Guatemala to Colombia and Ecuador.

Subspecies Range: Venezuela.

Field Characters: Too close to several species of ithomiids to distinguish usually with certainty on the wing, although it has considerably less black than any of the other family.

Number: Total, 22. Taken, 4.

Date: April 29 and 30.

Record: 1948—April 29 (1, No. 48661), 30 (3 taken, No. 48459, 18 seen. I base this sight record on the fact that the 3 taken were from a small, dense flock of 18 others).

***Pyrrhybris pyrrha malenka* Hew.**

Field Name: Large Ithomiid Mimic.

Species Range: Central America to South Brazil.

Subspecies Range: Venezuela and Colombia.

Field Characters: Larger than *Charonias*. Indistinguishable on the wing from the ithomiid *Tithorea harmonia furia*, and *Heliconius metalilis*.

Number: Only 2 seen and taken.

Record: 1946—September 8 (female, No. 461175). 1948 — June 24 (1, No. 48895); July 11 (1 taken at Kilometer 30, north of the Pass, No. 481148).

***Pereute charops meridana* Fruh.**

Field Name: Melpomene Mimic.

Species Range: Guatemala to Ecuador and Colombia.

Subspecies Range: Venezuela.

Field Characters: The female above and below, and the male below, are startlingly like the scarlet and black of *Heliconius melpomene*. The male above is a dusty black. This pattern closely resembles that of the nymphalid *Adelpha lara*, but the latter has a swift direct flight.

Number: Total, 79. Taken, 24.

Sex: Both sexes taken.

Date: April 1 to September 8.

Frequency: This species migrates singly or in small flocks, the sexes usually being segregated in the latter case. The total count showed 32 males and 47 females. A number of times this species was found flying with its model, *Heliconius melpomene*.

Flight: Like the flight of the *Heliconius* model, this species had a wavering, low and apparently weak flight.

Variations: In the male taken July 21 the ventral red shows faintly on the upper side, known as variety *cauca* Rober. In males taken on April 1, May 1, June 6 and July 16 and 20, the ventral red is replaced by bright yellow.

Record: 1945—June 24 (female); August 4 (female). 1946 — April 29 (male); September 7 (female). 1948—April 1 (1 male, 3 females), 26 (female, No. 48450a, 8 others seen), 29 (female), 30 (3 females taken, No. 48450, 18 others seen; 2 males taken, No. 48459, 11 others seen); May 1 (male), 5 (12 males seen), 25 (female, No. 48460, 7 seen); June 6 (male); July 16 (male and female), 20 (male and female), 21 (male).

The Tribe Pierini is represented by six genera. These may be superficially defined as medium sized Whites, tipped or bordered with black. *Melete* is the only one appreciably greenish.

***Leptophobia aripa aripa* (Bois.).**

Field Name: Medium Notch-border White.

Species Range: Mexico to Brazil and Bolivia.

Subspecies Range: Colombia and Venezuela.

Field Characters: Forewing black bordered with notch. Plain white hindwing distinguishes it from *tovaria* and the two species of *Itaballia*.

Number: Rare among the migrants. Taken, 5.

Sex: Both sexes taken.

Date: April 27 to October 7.

Record: 1945—June 20 (1). 1946: October 7 (1). 1948—April 27 (1, No. 48410), 30 (1); May 9 (2); July 2 (1).

***Leptophobia tovaria tovaria* (Feld.).**

Field Name: Broad-bordered White.

Species Range: Colombia and Venezuela to Peru.

Subspecies Range: Colombia and Venezuela.

Field Characters: Very wide-bordered notched white. Dark-veined below. Easily confused with *L. penthica* and *Pieris mandela*.

Number: A rare insect. Taken, 5.

Sex: Both sexes taken.

Date: April 29 to September 7.

Record: 1946 — September 7 (1 taken). 1948—April 29 (1); May 28 (1); June 6 (1); July 15 (1). Each insect thus taken in a different month.

***Leptophobia penthica stannata* (Lucas).**

Field Name: Broad-bordered Spot White.

Species Range: Venezuela and Colombia to Peru.

Subspecies Range: Venezuela.

Field Characters: The black border reaches to the central white and cuts off a large forewing spot. Confused only with dark colored *Pieris mandela*.

Number: Rare. Only 3 taken.

Sex: Both sexes taken.

Date: May 8 to July 3.

Record: 1948—May 8 (1, No. 48500), 15 (1); July 3 (1).

***Melete lycimnia euryimnia* (Feld.).**

Field Name: Large Black-bordered Green.

Species Range: Colombia, Venezuela and Brazil.

Subspecies Range: Colombia and Venezuela.

Field Characters: The only large greenish pierid with a wide border and a rectangular spot on the fore-edge of the forewing.

Number: Only 2 specimens taken.

Date: May 28 to July 21.

Record: 1946—May 28 (1). 1948—July 21 (1, No. 481277).

***Andropodum drusilla drusilla* (Cramer).**

Field Name: Medium Faint-tipped White (male); Black bordered-and-edged White (female).

Species Range: South Florida to Brazil.

Subspecies Range: Colombia and Venezuela.

Field Characters: Male white with a faint gray wing tip; female black-bordered.

Number: Taken, 18.

Sex: Both sexes taken.

Date: April 23 to July 21.

Record: 1946—April 28 (male); May 25 (1). 1948—May 25 (female); June 6 (female, No. 48734), 15 (3 males, No. 48794); July 5 (male, No. 481086), 8 (6 females), 13 (male), 17 (2 females), 21 (2 males).

***Ascia monuste monuste* (Linn.).**

Field Name: Scallop-bordered Medium White.

Species Range: Southern United States and West Indies to Venezuela and Argentina.

Subspecies Range: Central America to Venezuela and Argentina.

Field Characters: The scalloped black border on all wings identifies this species even on the wing.

Number: Several thousand seen. Taken, 60.

Sex: Both sexes taken.

Date: April 15 to September 1.

Record: 1946—May 23 (1), 28 (3 taken); September 1 (55 counted). 1948—April 15 (150 counted); June 6 (3 taken, No. 48736); July 5 (1, No. 481089), 8 (5), 10 (1 taken, 100's seen), 13 (2 taken, 100's seen), 15 (13), 16 (6), 17 (1), 20 (3), 21 (14), 26 (7 taken, 1000's passing), 29 (800 counted); August 2 (2).

***Ascia sevata sevata* (Feld.).**

Field Name: Faint-scalloped White.

Species Range: Central America to Bolivia.

Subspecies Range: Colombia and Venezuela.

Field Characters: Scalloped border faint and confined to forewing.

Number: Rare, only a single specimen taken. Flying in a dense flock of other pierids.

Record: 1948—June 6 (male).

***Itaballia demophile demophile* (Linn.).**

Field Name: Black-bordered Notched White.

Species Range: Central America to Paraguay.

Subspecies Range: Colombia and Venezuela.

Field Characters: A medium white with notched black border.

Number: Rare. Taken, 6.

Record: 1946—May 28 (2). 1948—July 14 (1), 15 (1), 16 (1), 21 (1, No. 481278).

***Itaballia pandosia pandosia* (Hew.).**

Field Name: Small Monkeyfaced White.

Species Range: Central America to Peru and Trinidad.

Subspecies Range: Venezuela and Trinidad.

Field Characters: Smaller, otherwise similar to *demophile*.

Number: Rare. A single specimen taken in company with 11 other species of pierids.

Record: 1948—July 8 (female).

***Pieris mandela mandela* Feld.**

Field Name: Yellow and Red Underwing.

Species Range: Central America to Venezuela and Bolivia.

Subspecies Range: Venezuela.

Field Characters: Black-bordered white, enclosing white spot in the forewing tip. Dark-veined below, with yellow and red spots.

Number: Rare. Taken, 5.

Date: June 10 to July 15.

Record: 1948—June 10 (1); July 14 (3 females), 15 (1).

***Anteos clorinde clorinde* (God.).**

Field Name: Giant Orange-spot.

Species Range: Texas to Mexico and Paraguay.

Subspecies Range: Colombia and Venezuela to Paraguay.

Field Characters: Wing spread three and one-quarter inches. Greenish-white with large yellow spot on forewings.

Number: Identified several times on the wing, but taken only once.

Record: 1948—July 5 (No. 481090).

***Anteos maerula* (Fab.).**

Field Name: Male: Giant Yellow-green Catopsilia; Female: Giant Greenish-white Catopsilia.

Species Range: Mexico to Peru, Venezuela and Trinidad.

Field Characters: Male, hardly to be told from *Phoebis eubule marcellina* female, not unlike *A. chlorinde*. It is the largest pierid, three and a half inches in extent.

Number: Probably not rare, but seldom permitted exact identification in the field. Taken, 7.

Sex: Both sexes taken.

Date: March 26 to August 8.

Record: 1945—June 20 (female), 21 (male and female). 1948—March 26 (female, No. 48337), April 21 (female, No. 48442), June 6 (female), August 8 (male, taken on board *Santa Paula*, flying with others eastward, off Puerto Cabello, thirty miles northwest of Portachuelo Pass.

Phoebis agarithe agarithe* (Bois.).Field Name*: Orange Catopsilia.*Species Range*: United States to Paraguay.*Subspecies Range*: Central America to Paraguay.*Field Characters*: Medium rich orange pierid; female with slight border.*Number*: Noted a number of times, but only 3 specimens taken.*Date*: May 25 to July 26.*Record*: 1946—May 25 (2, male and female). 1948—July 26 (1).***Phoebis rurina* (Feld.).***Field Name*: Male: Large, Yellow, Tailed Catopsilia. Female: Large, Red-edged Catopsilia.*Species Range*: Venezuela, Colombia, Ecuador and Peru.*Field Characters*: Male is larger, but sometimes as orange as *P. agarithe*; female is unique in the broad red border to the hindwing.*Number*: Observed many times. Taken, 26.*Sex*: Both sexes taken.*Date*: April 15 to July 28.*Record*: 1946—May 25 (17 males and 4 females taken); June 8 (1000's seen). 1948—April 29 (female taken, 16 seen), 30 (61 seen); May 1 (female, 29 seen), 8 (105 counted); June 6 (male); July 14 (female), 23 (male).***Phoebis sennae* (= *eubule*) *marcellina* (Cram.).***Field Name*: Common Large Green Catopsilia.*Species Range*: United States to Argentina.*Subspecies Range*: Sub-tropical America.
Field Characters: Our old friend, *Catopsilia eubule*, is hardly recognizable under its new name. This large, greenish catopsilia is common in most tropical places. The female has a slight border.*Number*: Vast numbers seen migrating in waves. Taken, 7.*Sex*: Both sexes taken.*Date*: May 4 to July 28.*Record*: 1945—July 7 (1), 20 (2 taken). 1946—May 4 (246 counted), 25 (3 taken), 27 (100's passing), July 3-8 (large numbers), 10 (1000's migrating), 26 (vast numbers). 1948—June 30 (100's passing); July 15 (1, No. 481557). April 15 to end of July, 100's and 1000's migrating day after day.***Phoebis statira* (Cram.).***Field Name*: Lemon Yellow and White Catopsilia.*Species Range*: South Florida to south Brazil.*Field Characters*: Proximal half of wings lemon yellow, distal half pale greenish.*Number*: Common, occasionally in large, dense flocks. Taken, 30.*Sex*: Both sexes taken.*Date*: May 5 to July 23.*Record*: 1946—May 5 (1), 25 (2), 28 (4). 1948—June 6 (14 taken, No. 48735), 17 (2),

20 (2); July 8 (4 taken), 10 (400 an hour), 17 (pouring through the Pass all last week), 23 (1).

Genus *Eurema*.

In journal notes I find the typically colored pierids divided into large, medium and small. On the wing, near at hand, it was often possible to distinguish these three classes. Tens of thousands of pierids passing at a distance day after day, or high in air, were indistinguishable and had to be lumped. Measurements confirmed these divisions; large pierids spreading from 2¾ to 3 inches; medium ones from 2 to 2½ inches; and small from 1¼ to 1¾ inches.

The genus *Eurema* consists altogether of small-sized species. Ten species were migrants and they readily fitted into a pattern and color classification as follows:**Black-tipped Whites.***albula**palmyra* (female)*phiale**xanthochlora* (female)**Black-tipped Yellows.***dina**salome**xanthochlora* (male)**Forewing Yellows.***elathea**gratiosa**palmyra* (male)*venusta***Black-tipped Orange.***proterpia*

A frequency classification works out as follows:

Abundant.*alba**dire**salome**venusta***Common.***elethea**gratiosa**palmyra**xanthochlora***Rare.***phiale**proterpia****Eurema albula* (Cram.).***Field Name*: Small Black-bordered White.*Species Range*: Central America and West Indies to Brazil.*Field Characters*: A small white pierid, with broad black tips and narrow border. This variable on hindwings but usually present (form *sineae*). In seven individuals it is absent (form *albula*). Hardly to be told from the female of *palmyra lydia*, except that the hindwing border is scalloped. The latter species is very rare, only 4 specimens having been taken. In the female *elethea* the forewings are washed with yellow.

Number: Great numbers seen. Taken, 50. Many others liberated after identification.

Sex: Both sexes taken.

Date: March 5 to August 8.

Frequency: One of the most abundant species. Very few days in 1946 and 1948 passed without seeing or taking them. Sometimes passed singly and steadily, but often in dense flocks or a stream throughout the hours of daylight. The insects often alighted, sometimes from weariness, again to avoid the impact of high winds. Swallows, dragonflies and robberflies all took toll.

Record: These are a few from many notes. 1946—May 23 (3, No. 46488, 100's of a fresh brood, fighting against a hard head wind), 28 (3 taken, 100's upon 100's seen), 29 (24 taken, 1000's passing), 31 (more migrating than before); July 3 (1000's low and high, in high wind), 5 (650 in twenty minutes), 18 (2, No. 46786, 100's passing); August 8 (hosts passing for hours). 1948—March 5 (100's); May 23 (2 taken among 100's, among 13 other species of pierids), 26 (50 in two minutes); June 5 (heavy migration), 6 (passing all day), 9 (10's of 1000's in dense flocks), 11 (still great numbers), 18 and 19 (passing for hours, too fast to count), 23 (4, No. 48825), 30 (still abundant). Abundant from July 1 to 29.

***Eurema dina leuce* Bois.**

Field Name: Small Forewing-bordered Yellow.

Species Range: Southern United States and West Indies to Argentina.

Subspecies Range: Panama and South America.

Field Characters: On the wing, this is indistinguishable from *salome* or from *xanthochlora* males except under most favorable conditions. As *dina* and *salome* are abundant, and *xanthochlora* is common, this confusion covers tens of thousands of individuals. The generous number taken of each species, or taken and liberated after examination, forms the basis for specific identification.

Number: Judging by those taken or identified, the total migrants must have been of the order of tens of thousands of the present species. Taken or examined, 58.

Sex: Both sexes taken.

Date: May 5 to July 28.

Record: 1948—May 5, 28; June 6, 7, 28; July 2, 8, 12, 15, 16, 21, 28, etc., etc.

***Eurema elathea* (Cramer), form *medutina* (Feld.).**

Field Name: Small Bar-wing.

Species Range: Southern United States to Argentina.

Field Characters: Male with its transverse forewing bar can be confused only with the male *palmyra*. The female with its yellow forewing resembles *gratiosa* and *venusta*.

Number: A very common species. Many thousands seen and two dozen taken.

Sex: Both sexes taken.

Date: May 9 to August 7.

Frequency: Flocks of many thousands. Many taken.

Record: A few taken in 1945. 1946—May 11, 29 (19 taken); June 7; July 5; August 7 (1,500 in an hour). 1948—May 9, 23, 24, 25, 29; June 6, 17, 30; July 5, 9, 15, 16, 24, 26, etc., etc.

***Eurema gratiosa* (Doubl. & Hew.).**

Field Name: Small Orange-spot.

Species Range: Honduras to Colombia, Venezuela, Trinidad and north Brazil.

Field Characters: The usually wide black border, with yellow fore and white hindwings, and especially large orange spot on fore-edge of hindwing distinguish this species. The first character can be made out on the wing.

Number: Large numbers must have passed unidentified. Taken, 31.

Sex: Both sexes taken.

Date: May 23 to August 2.

Record: 1945—July 16 (1), 20 (1). 1946—May 29 (8 taken, 100's seen); July 17 (10 taken, 100's passing with others, 18 caught and examined). 1948—May 23 (2), 25 (1), 29 (1), 30 (1); July 5 (1), 8 (1), 21 (1), 23 (1); August 4 (4 taken).

***Eurema palmyra lydia* (Feld.).**

Field Name: Black-bar (male).

Species Range: Central America and West Indies to Brazil.

Subspecies Range: Costa Rica to Venezuela.

Field Characters: The black-barred male is indistinguishable from the male *elathea*, but the female lacks all yellow.

Number: Doubtless many not identified, but two certain flocks, and many single ones examined. Taken, 16.

Sex: Both sexes taken.

Date: May 23 to July 21.

Record: 1946—May 28 (2 taken), 29 (5 taken). 1948—May 23 (1); June 6 (2); July 8 (2), 15 (1), 16 (1), 21 (1), 26 (1).

***Eurema phiale columbia* (Feld.).**

Field Name: Small Yellow-edged White.

Species Range: Colombia, Bolivia to Guianas and Brazil.

Subspecies Range: Colombia, Venezuela and Bolivia.

Field Characters: A small white pierid, with wide forewing border, and a yellow stain around the hindwing edge.

Number: A single specimen taken.

Record: 1948—July 13 (1 taken).

***Eurema proterpia proterpia* (Linn.).**

Field Name: Small Black-bordered Orange.

Species Range: Texas to Ecuador.

Subspecies Range: Texas to Venezuela.

Field Characters: This would be an easy species to identify on the wing on account of its general rich orange color. Unfortunately it seems to be very rare.

Number: A single specimen taken.

Record: 1946—July 3 (1 taken, No. 46725).

***Eurema salome* (Feld.), form *salome*.**

Field Name: Small Black-bordered Yellow.

Species Range: Mexico to Bolivia and Venezuela.

Field Characters: The male is easily confused with *dina* and the male *xanthochlora*. The female is characterized by a distinct pointed tail on the hindwing.

Number: Several notes on the female in life, together with many taken show this as one of the four abundant species. Taken, 30.

Sex: Both sexes taken.

Date: March 16 to October 7.

Frequency: Seldom singly. Often with other small pierids.

Record: 1945—March 16 (1); April 12 (5); October 7 (1). 1946—April 27 (8 taken, heavy migration, 1,840 counted). 1948—April 17 (1, No. 48372), 27 (1, No. 48411), 30 (1); May 9 (2), 15 (1), 21 (1), 23 (2), 26 (1), 29 (4 taken); June 6 (2), 11 (1), 14 (1), 22 (1), 30 (1); July 3 (1, No. 481029), 4 (2), etc., etc.

***Eurema venusta* Bois., forms *venusta* and *limbia* (Feld.).**

Field Name: Small Yellow-forewing.

Species Range: Colombia, Venezuela, Guianas and Amazonia.

Field Characters: The yellow forewing with its wide black border is a good character except in the case of the female *elathea*.

Number: Swarms of this species came

through the Pass week after week, and seldom a day without seeing them. One of the most abundant insect migrants.

Sex: Both sexes taken.

Date: April 30 to July 28.

Record: For the year 1948 the following represent captures of one to ten on each date: 1948—April 30; May 14, 23, 24, 25, 26, 29; June 6, 7, 22, 24, 28; July 3, 5, 8, 13, 14, 15 (15 taken), 16, 21 (13 taken), 23, 24, 28, etc., etc. Swarms of many thousands passed on May 26, June 6, July 5, 8 and 21.

***Eurema xanthochlora xanthochlora* (Koll.), female form *marjoris* Klots.**

Field Name: Forewing-bordered Yellow (male); Forewing-bordered White (female).

Species Range: Central America, Colombia, Peru and Bolivia.

Subspecies Range: Colombia, Venezuela and Brazil.

Field Characters: Male with its yellow color and the black-bordered forewing is close to *dina* and *salome*. The whitish female with broad border confined to the forewing is easy to tell under favorable conditions.

Number: Taken, 11. Many examined and liberated.

Sex: Both sexes taken.

Date: April 30 to July 26.

Record: 1948—April 30 (1); May 9, 23, 25, 28; July 3, 8, 14, 15, 23, 26. These dates represent the major number of captures or examinations.

EXPLANATION OF THE PLATE.

PLATE I.

Forty-four species of butterflies of the family Pieridae taken as migrants at Portachuelo Pass, Rancho Grande, north-central Venezuela.

FIG. 1. *Dismorphia amphione astynomides* (male).

FIG. 2. *Dismorphia critomedia*.

FIG. 3. *Dismorphia hyposticta*.

FIG. 4. *Dismorphia medora medora*.

FIG. 5. *Dismorphia melite*.

FIG. 6. *Dismorphia nemesis nemesis* (male).

FIG. 7. *Dismorphia nemesis nemesis* (female).

FIG. 8. *Dismorphia theucharila theucharila*.

FIG. 9. *Pseudopieris nehemia viridula*.

FIG. 10. *Hesperocharis marchalii marchalii*.

FIG. 11. *Catasticta crowleyi*.

FIG. 12. *Catasticta flisa flisa*.

FIG. 13. *Catasticta prioneris albescens*.

FIG. 14. *Leodonta dysoni dysoni*.

FIG. 15. *Leodonta tagaste marginata*.

FIG. 16. *Archonias tereas critias* (male).

FIG. 17. *Archonias tereas critias* (female).

FIG. 18. *Charonias eurylete caraca*.

FIG. 19. *Pyrrhybris pyrrrha malenka*.

FIG. 20. *Pereunte charops meridana* (male).

FIG. 21. *Pereunte charops meridana* (female).

FIG. 22. *Leptophobia aripe aripe*.

FIG. 23. *Leptophobia penthica stammata*.

FIG. 24. *Leptophobia tovaria tovaria*.

FIG. 25. *Melete lycimnia eurymnia*.

FIG. 26. *Andropodum drusilla drusilla*.

FIG. 27. *Ascia monuste monuste*.

FIG. 28. *Ascia sevata sevata*.

FIG. 29. *Itaballia demophile demophile*.

FIG. 30. *Itaballia pandosia pandosia*.

FIG. 31. *Pieris mandela mandela* (male).

FIG. 32. *Pieris mandela mandela* (female).

FIG. 33. *Anteos chlorinde chlorinde*.

FIG. 34. *Anteos maerula*.

FIG. 35. *Phoebis agarithe agarithe*.

FIG. 36. *Phoebis rurina*.

FIG. 37. *Phoebis sennae marcellina*.

FIG. 38. *Phoebis statira*.

FIG. 39. *Eurema albula*.

FIG. 40. *Eurema dina leuce*.

FIG. 41. *Eurema elathea*.

FIG. 42. *Eurema gratiosa* (male).

FIG. 43. *Eurema gratiosa* (female).

FIG. 44. *Eurema palmyra lydia* (male).

FIG. 45. *Eurema palmyra lyd'a* (female).

FIG. 46. *Eurema phiale columbia*.

FIG. 47. *Eurema proterpia proterpia*.

FIG. 48. *Eurema salome* (male).

FIG. 49. *Eurema salome* (female).

FIG. 50. *Eurema venuste*.

FIG. 51. *Eurema xanthochlora xanthochlora*.